The following is mostly taken from "A Little Book of Coincidence in the Solar System" by John Martineau.

I've attempted to summarize some of the coincidences described in this book. While doing so I came across even more coincidences to add to this burgeoning list.

There may be fundamental relationships between space, time and life which have not yet been understood.

Is it all just a coincidence, or do the patterns perhaps explain the scientists?

# The Seven

There are seven clearly visible moving heavenly bodies and [they may be arranged around a heptagon in order of their apparent speed against the fixed stars](#).

The Moon appears to move the fastest, then Mercury, Venus, the Sun, Mars, Jupiter and Saturn.

Each heavenly body was assigned to a day of the week. [Starting with the Moon](#), the order of the days of the week can be derived by first following the path towards Mars:

The Moon (Monday), Mars (Tuesday), Mercury (Wednesday), Jupiter (Thursday), Venus (Friday), Saturn (Saturday), the Sun (Sunday).

In English, the names for several of the days of the week come from Norse mythology.

Tuesday is [Tīw's day](#). Tīw is equated with Mars (Martedì, Mardi).

Wednesday is [Wodan's day](#). Wodan is related to the Germanic god known as Mercury by Roman writers (Mercoledì, Mercredi).

Thursday is [Thor's day](#). Thor is associated with Jupiter, also known as Jove (Giovedì, Jeudi).

Friday (venerdì, vendredi) is [Freyja's](#) or [Frigg's day](#). The Norse name for the planet Venus is Friggjarstjarna (Frigg's star).

In antiquity the seven planets corresponded with the seven known metals, [their compounds giving rise to color associations](#).

This ancient system [predicts the modern order by atomic number of the metals](#).

The bottom image gives the order of elements with increasing atomic weights, starting with iron:

Iron – 26 (Mars)

Copper – 29 (Venus)

Silver – 49 (Moon)

Tin – 50 (Jupiter)

Gold – 79 (Sun)

Mercury – 80 (Mercury)

Lead – 82 (Saturn)

The electrical conductivity sequence also appears round the outside starting with lead.

The orbital motion of the planet correlates in sequence with its corresponding metal's conductivity. The slower a planet moves, the less able its corresponding metal is to conduct electricity!

## Ratios, Rhythms and the Golden Section

In the 17th century Johannes Kepler set about to calculate the Harmony of the Spheres.

He noticed that ratios between the extreme angular velocities of the planets were all harmonic intervals. He wrote a book called Musica Universalis that shows the relationship between geometry, cosmology, and harmonics.

A century after Kepler's death, the Titius–Bode law or Bode's Law hypothesized that the bodies in some orbital systems, including the sun's, orbit in a function of planetary sequence.

Since then, many more patterns have been discovered.

The periods of the planets sometimes occur as simple ratios of each other. For example, Jupiter and Saturn have a 2:5 ratio, with an accuracy of 99.3%.

It takes Jupiter 11.86 Earth years to orbit around the Sun, and Saturn 29.5 years, forming the 2:5 ratio.

Uranus, Neptune and Pluto are especially rhythmic and harmonic, displaying a 1:2:3 ratio of periods with an accuracy of 99.8%.

Neptune completes its orbit approximately every 164 Earth years, and Uranus every 84 years. Add them together to get Pluto's 248 year orbit.

Another example is the 1:2:4 resonance of Jupiter's moons Ganymede, Europa and Io.

Our two planetary neighbors resonate a 3:4 rhythm, a deep musical fourth. Earth kisses Mars three times every 780 days for every four Venus kisses, every 584 days, with a 99.8% accuracy.

Earth and Mercury kiss 22 times in 7 years, and Mercury and Venus are beautifully in tune after 14 kisses.

The first planet is remarkable, for one Mercury day is exactly two years, during which time the planet has revolved on its own axis exactly three times.

And now we meet the Golden Section (Φ or phi).

The golden section often appears as 0.618, 1.618, or 2.618, and is found throughout plant and animal life.

A pentagram, embodying the Golden Section proportion, both spaces Earth and Mercury's mean orbits and sizes their relative physical bodies with 99% accuracy.

Another instance of a two planet relationship like this also involves Earth. Earth and Saturn's orbits and sizes are related by a fifteen-pointed star.

For the next coincidence take three circles and put them together so that they all touch. The orbits of the first two planets are hiding in this simple design.

If Mercury's mean orbit passes through the centers of the three circles then Venus' encloses the figure. (99.9% accuracy).

Venus, our closest neighbor, kisses us every 584 days. Each time one of these kisses occurs the Sun, Venus and the Earth line up two-fifths of a circle further around, so a pentagram of conjunctions is drawn, taking exactly 8 years, or 13 Venusian years (99.9%).

Notice the Fibonacci numbers: 5, 8, 13. The periods of Venus and Earth (583.92/365.25) are also closely related as $1/Φ$ (99.6%).

The harmony of Earth and Venus draws a beautiful pattern. In this diagram, four eight-year cycles are shown.

Here's the sun-centered version of this five-petalled flower.

In case you think this is all pure lunacy, then you're in luck, for we've arrived at the moon herself.

## Luna

Have you ever wondered why the Moon appears to fit precisely over the Sun during an eclipse? The Moon is 400 times smaller than the Sun, yet it's also 1/400th of the distance between the Earth and the Sun.

Isaac Asimov described this as being 'the most unlikely coincidence imaginable'.

The sizes of the Moon and Earth also relate as 3 to 11 (99.9%).

The sum of the radii of both the Earth and Moon (in miles) is 3960 + 1080 = 5040. This means that the sum of their diameters is also the number of minutes in a week (7 days × 24 hours × 60 minutes = 10,080).

The ratio of the radius of the moon and the radius of the earth is 1080/3960, which simplifies to 3/11. This ratio can also be expressed as (4 - π)/π, when using 22/7 as the value of π. The sizes of the earth and the moon are related by a simple function of π.

The sum of their radii in miles is 5040, which when divided by 14 is 360 (the number of degrees in a circle). This would not happen for another pair of objects with radii in the same ratio—it only happens when the sum of their radii is 5040.

If you draw down the Moon to the Earth, then a circle through the center of the Moon will have a circumference equal to the perimeter of an earthly square enclosing the Earth.

The sizes of the Moon and the Earth "square" the circle. The ancients seem to have known about this, and hidden it in the definition of the mile.

Radius of the Moon = 1080 miles = 3 x 360

Radius of the Earth = 3960 miles = 11 x 360

Radius of Earth + Radius of Moon = 5040 miles = 1 x 2 x 3 x 4 x 5 x 6 x 7 = 7 x 8 x 9 x 10

Diameter of Earth = 7930 miles = 8 x 9 x 10 x 11

There are 5280 feet in a mile = (10 x 11 x 12 x 13) – (9 x 10 x 11 x 12)

The 3:11 ratio is also invoked by Venus and Mars, as the closest:farthest distance ratio that each experiences of the other is 3:11.

3/11 rounds to 27.3%, and 27.3 is the number of days it takes for the Moon to orbit the Earth, and 27.3 days is the average rotation period of a sunspot.

There are an average of 12.37 full moons in a year. This number can be derived using two simple mathematical techniques:

First, draw a circle, diameter 13, with a pentagram inside. Its arms will measure 12.364, almost the right number.

An even more accurate way is to draw the second Pythagorean triangle (the 5-12-13), and divide the 5 side into 2:3. The resulting hypotenuse has a length of 12.369 (99.999%).

The numbers 18 and 19, when combined with the golden section, express many of the major time cycles of the Sun-Moon-Earth system. When multiplied together, they produce the following results:

18 years = The Saros eclipse cycle (99.83%)

18.618 years = [Revolution of the moon's nodes](link) (99.99%)

19 years = [The Metonic cycle](link) (99.99%)

18.618 x 18.618 = [The eclipse year, or Draconic year](link). (99.99%)

18.618 x 19 = [The lunar year, or Islamic year](link) (99.82%)

18.618 x 20.618 = 13 full moons (99.99%)

[Robin Heath](link), who discovered many of these relationships, calls this feature of the Sun-Moon-Earth system "the evolutionary engine".

## The Outer Planets and Beyond

The average orbits of Jupiter and Mars [can be formed from four touching circles or a square](link) (99.98%).

A pair of asteroid clusters, [called the Trojans](link), orbit around Jupiter at exactly 60° ahead and 60° behind the planet.

Using the orbit of Jupiter and the pair of Trojan asteroid clusters, you can produce Earth's mean orbit [by drawing three hexagrams](link) (99.8%).

The outermost circle represents Jupiter's mean orbit, and the image of Earth represents Earth's mean orbit.

One of the most fascinating examples of hexagonal patterns in the solar system is [Saturn's hexagon](link). The sides are about 8,600 miles long, greater than the diameter of the Earth.

Interestingly enough, 8,600 / 1.618 gives the number of feet in a mile to 99.3% accuracy (my own observation...I was unable to find a more accurate number than 8,600, so the relation between Saturn's hexagon, the golden section and the mile may be more or less accurate than 99.3%).

The Earth-Saturn [synodic period](link) is [378.107 days](link) and the Earth–Jupiter synodic period is [398.883 days](link).

The golden section [can be seen defined here in time and space to a very high accuracy](link) (99.9%).

The [lunar year](link), or 12 lunar months, is 354.37 days.

Jupiter's synodic year relates to the lunar year with an 8:9 ratio (99.9%). Saturn's synodic year and the lunar year have a 15:16 ratio (99.9%). These two ratios are fundamental in music, as the tone and halftone respectively.

Jupiter and Saturn's orbits are in [the proportion 6:11](link), double the 3:11 ratio between the Moon and Earth (99.9%).

The [dwarf planet Makemake](#) may also be in a [6:11 resonance with Neptune](#).

Saturn's orbit invokes π (pi) twice.

The circumference of [Mars' orbit](#) matches [Saturn's orbit](#) (99.9%).

The diameter of [Neptune's orbit](#) matches the circumference of Saturn's orbit (99.9%).

The orbital period of [Neptune](#) (approximately 60,000 days) is twice that of [Uranus](#) (30,000 days) and two-thirds that of [Pluto](#) (90,000 days).

One of the most amazing symmetries is that the Milky Way, the plane of our own galaxy, [is tilted at almost exactly 60° to the ecliptic, or the plane of our solar system](#). (99.7%)

Every year the Sun crosses the galaxy through the galactic center, and, remarkably, being alive in these times means this happens on midwinter's day.

[In this idealized image](#), the midwinter Earth is shown superimposed on the starry sphere, tilted back slightly from the horizontal plane of the ecliptic.

Kepler, Newton, Einstein and others to this day have looked for simple and beautiful relationships in nature, and then expressed them as equations whenever they could. What will the scientists of the 21st century discover?

The golden section, long associated with life, plays lovingly around Earth.

Does this have something to do with why we are here and what we might really be? Could these techniques be used to locate intelligent life in other solar systems?

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# Continued

[Here's a useful chart](#) of the various measurements of the Sun, the planets and some of their moons.

[Here are a few](#) of the exquisite patterns that are drawn [in our solar system](#).

Here are some more coincidences that wouldn't fit in the main post:

The ratio between Earth's outermost orbit and Venus' innermost orbit [is intriguingly given by a simple square](#) (99.9%).

Venus rotates extremely slowly, and is the only planet that rotates in a "clockwise" direction. The rotation period of Venus, 243 Earth days, is two-thirds of an Earth year (99.8%).

Venus orbits the Sun approximately every 225 Earth days (224.7). A cute trick to remember this lies in the word Venus itself:

V is the 22nd letter, E is the 5th, and NUS is SUN backwards. Thus, it takes Venus 225 days to revolve around the Sun.

This image shows further harmonic patterns: two from the orbits of Jupiter's moons, two from Saturn's moons, and two from the outer planets.

Although tiny inaccuracies are visible, an easy way to visualize the orbits of Jupiter, Saturn and Uranus is to draw an equilateral triangle with an octagram inside.

This is a spiky inversion of the touching circles solution for the first three planets, depicted in the diagram on the lower right of this image.

Jupiter and Saturn, resonating in 2:5, meet three times during five Jupiter years and two Saturn years.

From Earth, this pattern is seen as both a triangle of conjunctions, 20 years apart, and as another opposing triangle of oppositions, which together form a hexagram.

It was recently discovered by Alex Geddes that there's an extraordinary relationship between the four small inner planets and the four outer gas giants.

Their orbital radii 'reflect' around the asteroid belt and multiply as shown to produce the following enigmatic constants:

The orbital radii (in miles) of Venus x Uranus = Mercury x Neptune = Earth x Saturn = Mars x Jupiter = 1.2e+17 (1.204, 1.206, 1.208).

Venus x Mars = Mercury x Earth = Saturn x Neptune = Jupiter x Uranus = 2.87 (2.872, 2.876)

Venus x Mars x Jupiter x Uranus = Mars x Earth x Saturn x Neptune

The Starry Signature: circumstantial evidence for life on Earth

Thanks for reading!

I hope this information is useful and that it inspires others as much as it has inspired me.